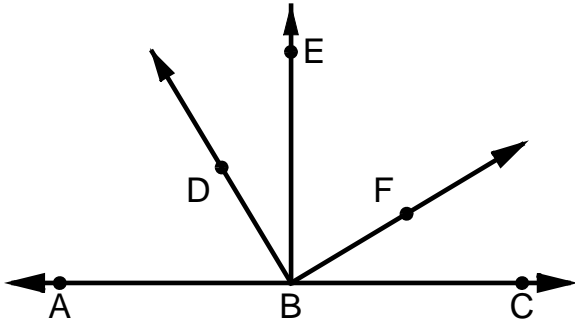


Worksheet 3.2 Perpendicular Lines

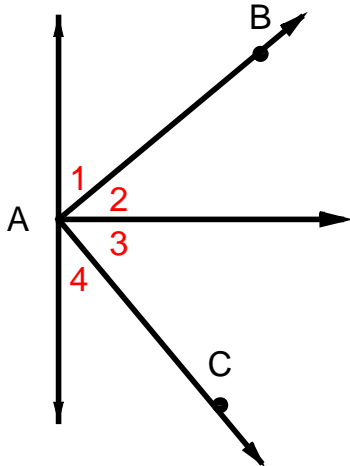
Name the definition or state the theorem that justifies the statement about the diagram below.



1. If $\angle ABE \cong \angle EBC$, then $\overleftrightarrow{AC} \perp \overrightarrow{BE}$.
 2. If $\angle EBC$ is a right angle, then $\overrightarrow{BE} \perp \overleftrightarrow{AC}$.
 3. If $\overrightarrow{BE} \perp \overleftrightarrow{AC}$, then $m\angle ABE = 90$.
 4. If $\overleftrightarrow{AC} \perp \overrightarrow{BE}$, then $\angle ABE$ is a right angle.
 5. If $\angle ABD$ and $\angle DBE$ are complementary angles, then $m\angle ABD + m\angle DBE = 90$.
 6. If $\overrightarrow{BE} \perp \overleftrightarrow{AC}$, then $\angle ABD$ and $\angle DBE$ are complementary.
- If, in the diagram above, $\overrightarrow{BE} \perp \overleftrightarrow{AC}$ and $\overrightarrow{BD} \perp \overrightarrow{BF}$, find the value of x .
7. $m\angle ABD = 6x$, $m\angle DBE = 3x + 9$, $m\angle EBF = 4x + 18$, $m\angle FBC = 4x$.
 8. $m\angle ABD = 2x - 15$, $m\angle DBE = x$.
 9. $m\angle ABD = 3x - 12$, $m\angle DBE = 2x + 2$, $m\angle EBF = 2x + 8$.

10. $m\angle DBE = 3x$, $m\angle EBF = 4x - 1$.

Decide if you can conclude from the given information in each exercise that $\overrightarrow{AB} \perp \overrightarrow{AC}$.



11. $\angle 1 \cong \angle 4$, and $\angle 2 \cong \angle 3$.

12. $m\angle 1 = 48$ and $m\angle 4 = 42$.

13. $\angle 1 \cong \angle 3$ and $\angle 2 \cong \angle 4$.

14. $\angle 1$ and $\angle 3$ are complementary.

15. $m\angle 1 = m\angle 2$ and $m\angle 3 = m\angle 4$.

16. $\angle 2 \cong \angle 3$.

17. $m\angle 1 = m\angle 4$.

18. $m\angle 1 + m\angle 4 = 90$.